

CLAIMS:

1. A photomultiplier comprising a plurality of dynodes arranged in cascade so that the second and any subsequent dynodes each receive electrons from the preceding dynode, the dynodes being of curvilinear cross-section and arcuate in extent about a common axis, successive dynodes being disposed so that the cascade extends radially relative to said axis.
2. A photomultiplier as claimed in Claim 1 wherein successive dynodes are disposed successively radially outwardly of each other, or successively radially inwardly of each other, relative to said axis.
3. A photomultiplier as claimed in Claim 1, wherein a said curvilinear cross-section comprises an arcuate portion and a straight portion extending tangentially therefrom, or a part-elliptical portion or a spiral portion.
4. A photomultiplier as claimed in Claim 1, wherein the dynodes are annular or part-annular or segmented.
5. A photomultiplier as claimed in Claim 3, wherein the dynodes are annular or part annular or segmented, and wherein the curvilinear cross-sections of the dynodes are sections through a set of toroidal surfaces having a common principal axis of rotation each intersected by one of a set of conical surfaces coaxial with the principal axis of rotation of the toroidal surfaces.
6. A photomultiplier as claimed in Claim 1, wherein the effective area of each of at least some of the dynodes is greater than that of the preceding one.
7. A photomultiplier as claimed in Claim 1 wherein the effective area of each of at least some of the dynodes is less than that of the preceding one.

8. A photomultiplier as claimed in Claim 1, wherein the effective area of the dynodes changes linearly from dynode to dynode.

9. A photomultiplier as claimed in Claim 1, wherein the dynodes are arranged in two coaxial substantially planar disc-like arrays arranged parallel to and facing each other.

10. A photomultiplier as claimed in Claim 1, wherein at least alternate dynodes are spaced from each other successively along said axis.

11. A photomultiplier as claimed in Claim 10 wherein successive dynodes are alternately disposed on coaxial male and female generally conical surfaces.

12. A photomultiplier as claimed in Claim 9, wherein at least one of the dynode arrays forms part of the vacuum envelope of the device.

13. A photomultiplier as claimed in Claim 1, comprising an annular part annular or segmented anode for receiving electrons from the last dynode.

14. A photomultiplier as claimed in Claim 9 comprising an annular part annular or segmented anode for receiving electrons from the last dynode, and wherein the anode is disposed between the dynode arrays.

15. A photomultiplier as claimed in Claim 13, wherein the support structure of the anode is of thin section whereby to reduce anode capacitance.

16. A photomultiplier as claimed in Claim 1, wherein a plurality of the dynodes are respective layers of a secondary emissive material deposited directly or indirectly on shaped surfaces of a common substrate of insulating material.

17. A dynode assembly for a photomultiplier or other electron multiplying device comprising at least two dynodes electrically isolated from each other, the dynodes comprising discrete layers of secondary emissive material on shaped surfaces of a common substrate of insulating material.

18. A photomultiplier or a dynode assembly as claimed in Claim 16 or Claim 17 wherein the substrate is machined, cast, sintered or otherwise of moulded construction.

19. A photomultiplier or a dynode assembly as claimed in Claim 17, wherein the secondary emissive layers are deposited on a conductive underlayer.

20. A photomultiplier or a dynode assembly as claimed in Claim 19 wherein the conductive underlayer of a said dynode is extended as a conductive track to form an electrical connection for the dynode.

21. A photomultiplier or a dynode assembly as claimed in Claim 17, wherein an electrical connector to a said dynode is embedded in the insulating substrate.

22. A photomultiplier or other electron multiplying device comprising a dynode assembly as claimed in Claim 17.